

REMARKS

Applicants appreciate the thorough examination of the present application that is reflected in the Official Action of March 24, 2005. Applicants also appreciate the Examiner's citation of U.S. Patent 6,734,465 to Taskar et al., U.S. Patent 6,521,915 to Odaki et al. and U.S. Patent 6,576,930 to Reeh et al. In response, the independent claims have been amended extensively and many of the dependent claims have been rewritten in independent form to clarify the patentable distinctions over these references, taken singly or in combination. Applicants respectfully submit that the pending claims are patentable for the reasons that now will be described. Also, at the request of the Examiner, the application has been reviewed, and Page 7, lines 14-15 have been amended to supply the Application Serial Number, and remove the attorney docket number. No other typographical errors were found.

The Restriction Requirement Is Not Being Traversed

In response to the restriction requirement, Claims 23-26 have been canceled, without prejudice. This election is being made without traverse, because Applicants agree that unpatentability of the Group I claims do not imply unpatentability of the Group II claims.

Claims 1 and 6 Are Patentable

Independent Claim 1 has been amended to recite:

1. A method for forming a transmissive optical element comprising:
 - filling a dome-shaped mold with a molten liquid that comprises a transparent plastic and a phosphor additive;
 - allowing the molten liquid to solidify to produce a dome-shaped transmissive optical element having phosphor dispersed therein and including a dome-shaped inner surface and a dome-shaped outer surface; and
 - forming a transparent dome-shaped shell directly on the dome-shaped inner surface and/or directly on the dome-shaped outer surface of the dome-shaped transmissive optical element having phosphor disposed therein.

Independent Claim 1 incorporates therein the recitations of Claims 2, 3, 4 and 5, and also recites that the transparent dome-shaped shell is formed directly on the dome-shaped inner surface and/or directly on the dome-shaped outer surface of the dome-shaped transmissive optical element having phosphor disposed therein. As noted in the present application at Page 4, line 19, the term "directly" means that there are no intervening elements. Support for

amended Claim 1 may be found, for example, in Figures 1A-1D and Page 4, line 24-Page 5, line 25. In particular, as noted in the present application at Page 5, lines 11-25:

Referring now to Figure 1C, one or more coatings 130 may be provided on the outside of the shell 100. The coating may be a protective coating, a polarizing coating, a coating with indicia and/or any other conventional coating for an optical element that is well known to those having skill in the art. In Figure 1D, one or more inner coatings 140 is provided on the inner surface of the shell 100. Again, any conventional coating or combination of coatings may be used.

Moreover, other embodiments of the invention provide both an inner and an outer coating for the shell 100 that includes uniformly distributed phosphor 110 and/or non-uniformly distributed phosphor 120 therein. By providing an inner and outer coating, improved index matching to the phosphor may be provided. Thus, three layers may be injection molded according to some embodiments of the present invention. Other embodiments of the present invention can use an index matching media, such as a liquid and/or solid gel, within the shell, to assist in index matching. The use of inner and outer layers can reduce the number of photons that can be trapped in the phosphor-containing layer due to index matching issues.

Applicants respectfully submit that neither Taskar et al. nor Odaki et al., nor their combination, describe or suggest the recitations of Claim 1 as amended. In particular, the passages cited by the Examiner in rejecting Claims 1-5 do not contain any description or suggestion of:

forming a transparent dome-shaped shell directly on the dome-shaped inner surface and/or directly on the dome-shaped outer surface of the dome-shaped transmissive optical element having phosphor disposed therein,

as recited in Claim 1. Accordingly, Claim 1 is patentable.

Dependent Claim 6 is patentable as depending from patentable Claim 1. Moreover, none of the cited passages from Taskar et al. (Figures 2-4 and Column 5, line 59-Column 6, line 61; Column 7, line 45-Column 10, line 67) appears to describe or suggest pre-forming the transparent dome-shaped shell and filling a dome-shaped mold that includes the transparent dome-shaped shell with molten liquid that comprises a transparent plastic and a phosphor additive. Accordingly, dependent Claim 6 is independently patentable.

Independent Claims 7 and 8 Are Patentable

Claims 7 and 8 have been rewritten in independent form to claim methods of fabricating transmissive keypad keys and transmissive keypad key faces, respectively.

Claims 7 and 8 were rejected as being anticipated by Taskar et al., specifically Figures 5 and 9. However, these figures, and the corresponding text of Taskar et al., do not appear to contain any description or suggestion of forming of keypad keys or keypad key faces. Rather, as noted in Taskar et al. Column 3, lines 21-25:

FIGS. 5, 6, 7, 8 and 9 of the drawings illustrate additional configurations of a light emitting device, constructed in accordance with the present invention, implemented on a substrate containing a multiplicity of individual LED modules.

Stated differently, a word search indicates that Taskar et al. does not appear to contain the words "key" or "keypad". For at least these reasons, Claims 7 and 8 are patentable over Taskar et al.

Claims 9-11 and 16-18 Are Patentable

Claim 9 has been amended to read as follows:

9. A transmissive optical element comprising:
a first dome-shaped shell that comprises a transparent plastic including a phosphor dispersed therein, the first dome-shaped shell including an inner surface and an outer surface; and
a second dome-shaped shell directly on the inner and/or outer surface of the first dome-shaped shell.

Claim 9 incorporates the recitations of original Claims 9, 12, 13 and 14 also recites a second dome-shaped shell directly on the inner and/or outer surface of the first dome-shaped shell. Respectfully, although the cited art describes many different structures for LED devices, there does not appear to be any description or suggestion of the claimed first and second dome-shaped shells directly on one another, as recited in Claim 9. Accordingly, Claim 9 is patentable. Dependent Claims 10-11 and 16-18 are patentable at least per the patentability of independent Claim 9 from which they depend. Moreover, Claim 11 is independently patentable because it recites that the phosphor is non-uniformly dispersed in the dome-shaped shell to provide an indicia in the dome-shaped shell. The provision of indicia does not appear to be described or suggested in the cited art.

New dependent Claim 27 recites the second dome-shaped shell directly on the inner surface of the first dome-shaped shell and a third dome-shaped shell directly on the outer surface of the first dome-shaped shell. None of the cited art appears to describe or suggest the provision of two dome-shaped shells directly on inner and outer surfaces of a first dome-shaped shell that comprises a transparent plastic including a phosphor dispersed therein. As

was noted in the present application, for example at Page 5, lines 11-25, in some embodiments, the inner and outer dome-shaped shells can provide improved index matching to the phosphor. Accordingly, new Claim 27 is independently patentable.

Independent Claim 19 Is Patentable

Claim 19 was rejected based on Figures 1B, 2B and 4 of Odaki et al. However, Applicants can find no description or suggestion in Odaki that Figures 1B, 2B or 4 constitute a keypad key shell, including a keypad key face and a keypad key wall. Rather, as noted in the Brief Description of the Drawings of Odaki et al., Column 3, lines 28-43:

FIGS. 1A and 1B are diagrams showing a structure of a main portion of an LED device according to a first embodiment of the present invention, wherein FIG. 1A shows a coating-type LED device and FIG. 1B shows a film-type LED device,

FIGS. 2A and 2B are diagrams showing a structure of a main portion of an LED device according to a second embodiment of the present invention, wherein FIG. 2A shows a cannonball-shaped LED device and FIG. 2B shows a block-shaped LED device,

FIG. 3 is a diagram showing a structure of a cap-type LED device according to a third embodiment of the invention,

FIG. 4 is a diagram showing a structure of a block-type device according to a third embodiment of the invention....

Stated differently, a word search indicates that Odaki et al. does not appear to contain the words "key" or "keypad". For at least these reasons, Claim 19 is patentable over Odaki et al. Claims 20-22 are patentable at least per the patentability of Claim 19 from which they depend. Moreover, Claim 21 is independently patentable because Odaki et al. does not describe or suggest the phosphor being uniformly dispersed in the keypad key face, and not included in a keypad key wall. Claim 22 is also independently patentable because Odaki et al. does not describe or suggest the phosphor providing an indicia in the keypad face.

Claim 19 was also rejected as being anticipated by Reeh et al. However, a word search of Reeh et al. indicates that Reeh et al. does not appear to contain the words "key" or "keypad". For at least these reasons, Claim 19 is patentable over Reeh et al. Claims 20-22 are patentable for the same reasons that were described above in connection with Odaki et al. This analysis will not be repeated for the sake of brevity.

Conclusion

Applicants again appreciate the thorough examination and the newly cited references. Applicants have now shown, however, that the claims as amended are patentable over the cited references. Accordingly, Applicants respectfully request withdrawal of the outstanding rejections and allowance of the present application.

Respectfully submitted,



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